CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2017-10-09-06** **Date: 10-10-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.
Address	:	Kodigehalli Sub division, BBMP, Bangalore.
Project Name	:	Improvements of Compound Wall in Byatranapura SC'S Burial Ground in Ward no.07 Byataranapura.
Agency	:	S.L.N. Constructions Sri.Narayanareddy R.V, Hebbal Kempapura, Bangalore-24.
Customer's Reference	:	BBMP/EE/BTP/WO/127/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-10-17
Sample ID No	:	2017-10-09-06-01
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 (Part 1,2 3,4,5, 6,11):1988 IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4 IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5 IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6 IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5 IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6
Date of test	:	09-10-17

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	2.65	–
2	Finess by Air permeablity method (m^2/kg, Min)	276.9	225m^2/kg, Min
3	Density (gm/cc)	3.25	–
4	Standard Consistency (%)	28.0%	Not specified
5	Initial Setting time	175 minutes	Not less than 30 minutes
6	Final Setting time	280 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	2mm	Not more than 10 mm

Note:

The results pertain to the samples received and tested.

All information furnished by Customer/Representative

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Quality Manager

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Certificate No.: TC-5548

CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2017-10-09-06** **Date: 06-11-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.
Address	:	Kodigehalli Sub division, BBMP, Bangalore.
Project Name	:	Improvements of Compound Wall in Byatranapura SC'S Burial Ground in Ward no.07 Byataranapura.
Agency	:	S.L.N. Constructions Sri.Narayanareddy R.V, Hebbal Kempapura, Bangalore-24.
Customer's Reference	:	BBMP/EE/BTP/WO/127/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-10-17
Sample ID No	:	2017-10-09-06-01
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 6, Determination of Compressive Strength, Clause 6
Date of test	:	09-10-17

Compressive Strength

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	3 Days	28.5N/mm^2	Not less than 27 N/mm^2
2	7 Days	39.5N/mm^2	Not less than 37 N/mm^2
3	28 Days	56.5N/mm^2	Not less than 53 N/mm^2

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2017-10-09-06** **Date: 12-10-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.
Address	:	Kodigehalli Sub division, BBMP, Bangalore.
Project Name	:	Improvements of Compound Wall in Byatranapura SC'S Burial Ground in Ward no.07 Byataranapura.
Agency	:	S.L.N. Constructions Sri.Narayanareddy R.V, Hebbal Kempapura, Bangalore-24.
Customer Reference	:	BBMP/EE/BTP/WO/127/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-10-17
Sample ID No	:	2017-10-09-06-02
Sample Type/ Size	:	20mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	09-10-17

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	265	265	5.3	94.7	90-100
3	10 mm	2658	2923	58.5	41.5	25-55
4	4.75 mm	1899	4822	96.4	3.6	0-10
5	Pan	178	5000	100	0	–

AE 127
Asst Exe Engg
AE (Retd)

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2017-10-09-06** **Date: 12-10-17**

Sample ID No : 2017-10-09-06-02

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	12.1	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	11.7	
3	Specific Gravity	2.59	–
4	Bulk Density(Loose) (Kg/l)	1.51	–
5	Bulk Density(Compacted) (Kg/l)	1.55	–
6	Water Absorption(%)	0.23	–
7	Aggregate crushing Value(%)	25.6	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	22.3	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

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TEST REPORT OF FINE AGGREGATE

Lab ID	:	**CP-2017-10-09-06** **Date: 12-10-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.
Address	:	Kodigehalli Sub division, BBMP, Bangalore.
Project Name	:	Improvements of Compound Wall in Byatranapura SC'S Burial Ground in Ward no.07 Byataranapura.
Agency	:	S.L.N. Constructions Sri.Narayanareddy R.V, Hebbal Kempapura, Bangalore-24.
Customer's Reference	:	BBMP/EE/BTP/WO/127/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-10-17
Sample ID No	:	2017-10-09-06-03
Sample Type	:	Fine Aggregate
Reference to BIS codes	:	IS 383 : 2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1, 3) RA2012 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption
Date of test	:	09-10-17
Total weight taken	:	1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0.0	100.0	100	100	100	100
2	4.75 mm	21	21	2.1	97.9	90-100	90-100	90-100	95-100
3	2.36 mm	163	184	18.4	81.6	60-95	75-100	85-100	95-100
4	1.18 mm	251	435	43.5	56.5	30-70	55-90	75-100	90-100
5	600 micron	208	643	64.3	35.7	15-34	35-59	60-79	80-100
6	300 micron	171	814	81.4	18.6	5-20	8-30	12-40	15-50
7	150 micron	98	912	91.2	8.8	0-10	0-10	0-10	0-15
8	Pan	88	1000	100.0	0.0	---	---	---	---
Result :The tested Sample Conforms to Grading Zone II									

AE(Mod)

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2017-10-09-06** **Date: 12-10-17**

Sample ID No : 2017-10-09-06-03

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	1.88	–
2	Specific Gravity	2.57	–
3	Material finer than 75 micron(%)	7.2	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

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TEST REPORT ON PHYSICAL REQUIREMENTS OF SOLID CONCRETE BLOCKS

Lab ID	:	**CP-2017-10-09-06** **Date: 12-10-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.
Address	:	Kodigehalli Sub division, BBMP, Bangalore.
Project Name	:	Improvements of Compound Wall in Byatranapura SC'S Burial Ground in Ward no.07 Byataranapura.
Agency	:	S.L.N. Constructions Sri.Narayanareddy R.V, Hebbal Kempapura, Bangalore-24.
Customer's Reference	:	BBMP/EE/BTP/WO/127/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-10-17
Sample ID No	:	2017-10-09-06-04
Sample Type/Size	:	Solid concrete blocks of size (400X200X200)mm
Reference to BIS codes	:	IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10 , Block density Annex - C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)
Date of test	:	09-10-17

BLOCK DENSITY:

Sl. No.	Measurement of overall Dimensions of Individual Blocks			Overall Volume of the Block in Cubic Centimetres	Weight of Oven Dried Block in Kilograms to the nearest 10 Gram	Block Density in Kg/cum*10^6	Avg.Block Density in (Kg/cum)	As per IS 2185 (Part 1):2005 (RA 2010)
	Length	Breadth	Height					
	mm	mm	mm	(Cm^3)	Kg	Kg/m^3	Kg/m^3	
1	400	200	202	16160	32.530	2013.0	2043.8	Not less than 1800Kg/m^3
2	401	201	200	16120	33.190	2058.9		
3	402	201	201	16241	33.45	2059.6		

WATER ABSORPTION:

Sl. No.	Wet weight after water absorption	Dry weight (Oven dry)	Water Absorption	Avg.Water Absorption	As per IS 2185 (Part 1):2005 (RA 2010)
	kg	kg	%	%	
1	34.630	32.730	5.81	5.27	Shall not be more than 10% by mass
2	34.890	33.270	4.87		
3	34.560	32.870	5.14		

AE(W)

AE(W) ND

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ID : CP-2017-10-09-06 Date: 12-10-17

ample ID No : 2017-10-09-06-04

DIMENSION ANALYSIS

Sl.no	Length mm	Breadth mm	Height mm	Requirement as per IS 2185(Part 1):2005
1	401	201	200	Length : ± 5mm Breadth : ± 3mm Height : ± 3mm
2	400	202	201	
3	402	203	202	
4	402	201	203	
5	403	200	201	
6	400	201	202	
7	401	203	203	
8	402	202	203	
9	402	201	202	
10	403	202	201	
11	401	203	200	
12	400	201	202	
13	402	200	201	
14	404	203	201	
15	402	203	201	
16	403	202	200	
17	401	201	202	
18	402	200	203	
19	401	202	202	
20	401	201	201	
Average of 20	**402**	**202**	**202**	

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Lab ID : CP-2017-10-09-06

Date: 12-10-17

Sample ID No : 2017-10-09-06-04

COMPRESSIVE STRENGTH:

Sl. No.	Size of solid block		Area	Failure Load	Compressive strength	Average Compressive strength
	Length	Breadth				
	mm	mm	(mm^2)	(KN)	N/mm^2	(N/mm^2)
1	401	201	80601	392.6	4.9	4.8
2	400	202	80800	388.5	4.8	
3	402	203	81606	379.9	4.7	
4	402	201	80802	384.7	4.8	
5	403	200	80600	381.9	4.7	
6	400	201	80400	381.5	4.7	
7	401	203	81403	390.1	4.8	
8	402	202	81204	391.9	4.8	

As per IS Requirements (Table 2, Clause 5.1, 5.2 and 9.4)

Compressive strength		
Grade	Minimum average	Minimum Individual units.
C (5.0)	5.00 N/mm^2	4.00 N/mm^2
C (4.0)	4.00 N/mm^2	3.20 N/mm^2

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CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2017-10-17-05** **Date: 20/10/2017**

Customer : Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.

Address : Kodigehalli Sub division, BBMP, Bangalore.

Project Name : Improvements of Compound Wall in Byatranapura SC'S Burial Ground in Ward no.07 Byataranapura.

Agency : S.L.N. Constructions Sri.Narayanareddy R.V, Hebbal Kempapura, Bangalore-24.

Customer's Reference : BBMP/EE/BTP/WO/127/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 17-10-17

Sample ID No : 2017-10-17-05-01

Customer ID : PCC

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 20/10/2017

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	PCC	M20	13/10/2017	20/10/2017	150.54 X 150.22 X 150.87	22614	8.162	391.2	17.3	17.6
2	PCC	M20	13/10/2017	20/10/2017	150.65 X 150.11 X 150.22	22614	8.162	409.3	18.1	
3	PCC	M20	13/10/2017	20/10/2017	150.17 X 150.65 X 151.00	22623	8.145	395.9	17.5	

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID	:	CP-2017-10-17-05
Customer	:	Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.
Address	:	Kodigehalli Sub division, BBMP, Bangalore.
Project Name	:	Improvements of Compound Wall in Byatranapura SC'S Burial Ground in Ward no.07 Byataranapura.
Agency	:	S.L.N. Constructions Sri.Narayanareddy R.V, Hebbal Kempapura, Bangalore-24.
Customer's Reference	:	BBMP/EE/BTP/WO/127/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	17-10-17
Sample ID No	:	2017-10-17-05-02
Customer ID	:	PCC
Sample Type /Size	:	150X150X150 mm
Sample grade/Age	:	M20 / 28 Days Compressive Strength
Reference to BIS codes	:	IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5
Date of test	:	10/11/2017

Date: 10/11/2017

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	PCC	M20	13/10/2017	10/11/2017	149.28 X 150.87 X 149.76	22522	8.175	506.7	22.5	22.5
2	PCC	M20	13/10/2017	10/11/2017	150.28 X 150.28 X 150.22	22584	8.118	514.9	22.8	
3	PCC	M20	13/10/2017	10/11/2017	150.65 X 150.76 X 151.09	22712	8.096	506.5	22.3	

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CP/TF/01

TEST RESULTS OF STEEL

Lab ID	:	**CP-2017-10-09-06** **Date: 10-10-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.
Address	:	Kodigehalli Sub division, BBMP, Bangalore.
Project Name	:	Improvements of Compound Wall in Byatranapura SC'S Burial Ground in Ward no.07 Byataranapura.
Agency	:	S.L.N. Constructions Sri.Narayanareddy R.V, Hebbal Kempapura, Bangalore-24.
Customer's Reference	:	BBMP/EE/BTP/WO/127/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-10-17
Sample ID No	:	2017-10-09-06-05
Sample Type	:	JSW
Reference to BIS codes	:	IS 1786-2008, IS:1608-2005(RA 2011), IS 1599-2012.
Date of test:	:	09-10-17

Sl.No	Identification of sample	Grade of the sample	Diameter of the steel bar	Weight of the sample	Yield stress	Tensile strength	Elongation	Bend test	Rebend test
			(mm)	(kg/m)	(N/mm2)	(N/mm2)	(%)		
1	JSW	Fe500	8	0.392	547	674	20.0%	Satisfactory	Satisfactory
2	JSW	Fe500	10	0.614	565	684	20.0%	Satisfactory	Satisfactory
3	JSW	Fe500	12	0.886	576	690	19.0%	Satisfactory	Satisfactory

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CP/TF/01

TEST REPORT OF PHYSICAL REQUIREMENTS OF BRICKS

Lab ID	:	**CP-2017-10-09-06** **Date: 15-10-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.
Address	:	Kodigehalli Sub division, BBMP, Bangalore.
Project Name	:	Improvements of Compound Wall in Byatranapura SC'S Burial Ground in Ward no.07 Byataranapura.
Agency	:	S.L.N. Constructions Sri.Narayanareddy R.V, Hebbal Kempapura, Bangalore-24.
Customer's Reference	:	BBMP/EE/BTP/WO/127/2016-17
Source of sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-10-17
Sample ID No	:	2017-10-09-06-05
Identification Mark on Brick	:	Wire Cut Brick
Reference to BIS codes	:	IS 1077 : 1992(RA 2011) Common Burnt Clay Building Bricks-Specification IS 3495 (Part 1 to 3) : 1992(RA 2011) Method of Tests Burnt Clay Building Bricks Part 1:Determination of Compressive Strength, (Cl 4.2.3) Part 2:Determination of Water Absorption,(Cl 4.1.3) Part 3: Determination of Efflorescence, (Cl 4)
Date of test	:	09-10-17

COMPRESSIVE STRENGTH

Sl.No.	Length (mm)	Breadth (mm)	Area (mm^2)	Failure Load (KN)	Compressive strength of individual bricks (N/mm^2)	Acceptablity as per IS 1077:1992, Clause 7.1
1	228.78	108.64	24855	191.6	7.7	The bricks shall have a minimum average compressive strength for various classes as given in Table 1 of IS 1077: 1992. The compressive strength of any individual bricks shall not fall below the minimum compressive strength specified for the corresponding class of brick by more than 15%.
2	227.98	107.36	24476	190.6	7.8	
3	230.01	106.99	24609	186.3	7.6	
4	229.11	107.58	24648	189.5	7.7	
5	228.16	106.28	24249	194.6	8.0	
Average of 5 bricks					**7.8**	

AE(WZ)

CIVIL PRO Sig..... Date..... BANGALORE

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Lab ID : **CP-2017-10-09-06** **Date: 15-10-17**

Sample ID No : **2017-10-09-06-05**

WATER ABSORPTION:

Sl.No.	Dry Weight	Wet Weight	Water Absorption(%)	Acceptablity as per IS 1077:1992, Clause 7.2
1	2.962	3.265	10.2	The water Absorption of bricks shall not be more than 20% by weight upto class 12.5 and 15% by weight for higher classes.
2	2.888	3.176	10.0	
3	2.906	3.186	9.6	
4	2.976	3.275	10.0	
5	2.875	3.208	11.6	
Average Water Absorption(%)			**10.3**	

EFFLORESCENCE:

Sl.No.	Length (mm)	Breadth (mm)	Area (mm^2)	Efflorescence	Acceptablity as per IS 1077:1992, Clause 7.3
1	229.37	108.38	24859	Slight	The efflorescence shall not be more than 'moderate" upto class 12.5 and "slight" for higer classes.
2	229.98	109.73	25236	Moderate	
3	227.63	109.63	24955	Moderate	
4	229.72	106.98	24575	Moderate	
5	228.13	109.19	24910	Slight	

DIMENSIONS AND TOLERANCES

Sl.No.	Dimensions obtained for 20 bricks(mm)		Acceptability as per IS 1077:1992, Clause 6.2(b)
1	Length	4600	4520 to 4680 mm
2	Width	2185	2160 to 2240 mm
3	Height	1380	1360 to 1440 mm

Note:

The results pertain to the samples received and tested.
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This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 30 days from the date of issue of test certificate

FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signatory
Quality Manager

CIVIL Pro Sig..... Date..... BANGALORE

****End of Report****

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
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